

V. **Safety of Life at Sea (SOLAS) Chapter II, Regulation 5 – *Fixed Gas Fire-Extinguishing Systems***

The following are highlights of the International Maritime Organizations SOLAS regulation for fixed gas fire-extinguishing systems. Section 1 is a general section, providing guidelines on the use of all gas fire-extinguishing systems. Section 2 is specific to the use of Carbon Dioxide systems.

Section 1 Highlights:

- Distribution piping and nozzle shall be positioned to provide a uniform distribution of agent.
- Audible warnings shall be available in areas where personnel are present or have access to. They shall operate for a suitable amount of time to warn personnel of a system discharge.
- All openings that may admit air and allow the extinguishing agent to escape shall be closed prior to system discharge.
- Automatic system release is not permitted. However, each container shall be affixed with an over pressure release device in the event the agent storage containers are exposed to a fire and are not operated. The agent will then be safely released into the protected space.
- Agent storage containers and system controls shall be readily accessible and properly labeled with instruction signs.
- A means of safely checking the quantity of agent in the storage containers shall be provided.
- When agent storage containers are stored outside the protected area, they must be stored in a safe and easily accessible location. The room housing the agent storage containers shall be well ventilated and access doors must open outward.
- Spare parts for the fixed fire extinguishing system must be stored on board and meet the Administrations requirements.

Section 2 Highlights:

- When protecting cargo spaces, the quantity of carbon dioxide shall provide a minimum volume of free gas equal to 30% of the gross volume of the largest cargo space that is protected on the vessel.
- When protecting machinery spaces, the quantity of carbon dioxide shall provide a minimum volume of free gas equal to the larger of the following:
 1. 40% of the gross volume of the largest machinery space being protected.
The volume shall exclude the casing above the level at which the horizontal area of the casing is 40% or less of the horizontal area of the space taken halfway between the top of the tank and lowest part of the casing; or
 2. 35% of the gross volume of the largest machinery space protected which includes the casing;provided that the mentioned percentages are capable of being reduced to 35% and 30% for cargo ships with a gross weight of 2,000 ton and also if two or more machinery spaces are not entirely separate. If they are separate, they shall be considered as one hazard.
- The volume of free carbon dioxide shall be calculated at (0.56 m³/kg).
- When protecting machinery spaces, the system shall be designed to discharge 85% of the gas into the space within 2 minutes.
- If the Carbon Dioxide system was installed on or after October 1, 1994, the system shall comply with the following:
 1. Two separate and distinct controls shall be provided to release the carbon dioxide into the protected hazard and to also activate the alarms. The first control will activate and discharge the carbon dioxide containers. The second control will open a valve fixed to the piping network that will allow the gas to flow into the protected hazard.
 2. The two controls shall be installed in a release box and properly identified for the space they are intended for. If the release boxes are locked, the key shall be located in a break-glass type enclosure and positioned next to the locked release box.